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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/807,737	02/27/1997	HISASHI OHTANI	0756-1638	5408

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EXAMINER

PERT, EVAN T

ART UNIT PAPER NUMBER

2813

DATE MAILED: 12/19/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

08/807,737

Applicant(s)

OHTANI ET AL.

Examiner

Evan T. Pert

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 19-84 is/are pending in the application.
- 4a) Of the above claim(s) 19-59, 63-71, 75-80 and 82 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 60-62, 72-74, 81, 83 and 84 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Claims 19-84 are pending. Claims 19-59, 63-71, 75-80 and 82 have been withdrawn from consideration as being drawn to a non-elected species, rejected claim 84 being generic only before applicant's amendment in paper no. 44. That is, applicant admits that claim 84 is no longer generic [at page 3, lines 2-3, paper no. 44].

Accordingly, the restriction requirement of paper no. 38 is held proper with claims 60-62, 72-74, 81 and 83-84 now pending for consideration based on applicant's election of "Species III" [elected without traverse in paper no. 40].

### ***Claim Objections***

2. Claim 84 (line 7) is objected to because "disposing a metal contact with at least a selected portion" should be grammatically corrected to --disposing a metal in contact with at least a selected portion--, which is understood for purposes of examination.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 84 is rejected under 35 U.S.C. 103(a) as being unpatentable over Masumo et al. (U.S. Patent 5,306,651) in view of Liu et al. (U.S. Patent 5,147,826).

Masumo et al. teach a method of manufacturing a semiconductor device including: forming an  $\text{SiO}_x\text{N}_y$  passivation layer 2 [col. 3, lines 8-9], depositing an amorphous Si layer 3 on and in contact with layer 2 [col. 3, line 15], disposing a metal (aluminum) contact 8 "in contact with" the Si film, and heating the amorphous film to crystallize it and thus form a crystalline channel which is taught to be superior to an amorphous channel in carrier mobility [col. 3].

Masumo et al. acknowledge the problem of excessive heating when crystallizing, but do not suggest applying a metal "catalyst" in contact with the amorphous film wherein the metal is heated to cause the amorphous film to crystallize at a lower temperature. Yet, this "catalyst" concept is the teaching of Liu et al., wherein Ni or Pa is disposed in contact with an amorphous Si film to lower crystallization temperature [abstract + claim 6].

It would have been obvious at the time of applicant's claimed invention to utilize Liu et al.'s method of disposing a metal catalyst to lower the crystallization temperature needed in Masumo et al.. One of ordinary skill in the art would have been motivated to lower the crystallization temperature to enable the use of a lower temperature-rated (less expensive) glass substrate 1 in Masumo et al..

5. Claims 60-62, 72-74, 81 and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masumo et al. in view of Liu et al. as applied to claim 84 above, and further in view of Makita et al. (U.S. Patent 5,710,050).

Masumo et al. teach that the silicon layer is irradiated to "improve crystallinity" [col. 3, line 31], and that the silicon oxynitride layer 2 is deposited by PECVD or LPCVD, both of which inherently require a "CVD system" [col. 3, lines 12-13].

While Liu et al. teach a desirable modification of Masumo et al. being the addition of metal catalyst in contact with amorphous silicon to crystallize at a lower temperature, they are silent with respect to disposing a "solution" such as "nickel acetate" in contact with an oxide ("wetting layer" or mask) that was formed on the amorphous Si.

However, Makita et al. teach the use of a "solution" of nickel such as "nickel acetate" 105 disposed on and in contact with oxide film 104 and in contact with the amorphous layer 103 [Fig. 2b, col. 12]. The "solution" serves the same "catalyst" purpose as the "evaporated" metal catalyst in Liu et al..

It would have been obvious at the time of applicant's invention to adopt the use of "solution" of "nickel acetate" at the suggestion of Makita et al. as an alternative to the evaporation of metal taught by Liu et al.. One of ordinary skill in the art would have been motivated to use "solution" to obviate the need for vapor deposition equipment.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 60-62, 72-74, 81 and 83-84 have been considered but are moot in view of the new ground(s) of rejection.
7. Rejections of record under 35 USC 112 are withdrawn.

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***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Evan T. Pert whose telephone number is 703-306-5689. The examiner can normally be reached on M-F (7:00-3:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Bowers can be reached on 703-308-2417. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ETP  
December 17, 2001

  
**EVAN PERT**